KPA1500 Firmware Release Notes

02.58 11/2/2021

· Support Microchip MCP79411 as well as NXP PCF8253 Real Time Clock/Calendar

· Avoid ATU IN LED blink on short QSY that doesn't cross a bin boundary

· Avoid ATU Tune when AH-4 Start is held down at amplifier power on

· Correct handling of Kenwood IF when XCVR is in split

02.56 8/24/2021

· Change +12V fault threshold from 13.2 to 13.6V

· Missing -12V supply (used solely for ALC) is now a soft fault

· Add **ˆTV** command to pull down AH4 KEY (tip of TUNE connector) for a specified period up to 100000 mSec. **ˆTV300;** pulls AH4 KEY down for approximately 300 mSec.

02.53 12/7/2020

· RADIO POLL Yaesu transceivers with FT to determine TX VFO

· Correct evaluation of XIT offset in Flex IF message

· **ˆAD** returns the most recent non-zero attenuator reason rather than the current reason

· Improved diagnostic when input RF precedes KEY IN pull down

· Display RF power even if KEY IN is not asserted and forward power is low

02.48 09/22/2020

· Bug fix: Not tracking K3 AUXBUS (bug introduced in 02.47)

· Bug fix: VFO tracking for Kenwood Memory channel when split

02.47 08/18/2020

· Bug fix: Wrong LPF relay selected on transition between two bands that share the same Low Pass Filter (e.g. 60/40, 30/20).

02.46 07/24/2020

· Bug fix: **ˆFL** command sometimes had stale error, affected KPA1500 Remote

· Add Radio Type K4 with increased XCVR frequency resolution

· Switch LPF as required on every QSY, whether or not a band change, for in-band QSY with MARS frequencies

· Accept XCVR frequency CAT messages from Yaesu FT-450, FTDX3000, FTDX5000, FT-891, FT-991A, FTDX101MP, FTDX101D

- Accept Kenwood XCVR frequency CAT messages for Split with either TX VFO

- Accept Flex XCVR frequency CAT messages with XIT offset

02.38 11/4/2019 (Production 12/3/2019)

- Bug fix: fan speed was reduced too quickly during cool-down

- Switch to STBY if BAND CHANGE->STBY is enabled and the frequency (from XCVR or TX count) is below the amp's frequency range

- Reduce reflected power fault events when band or ATU settings change

- Reduce turn-off delay when XCVR KEY is used

- Wait longer after band change to inform K3 that KPA1500 has switched to STBY when BANDCHANGE->STBY is YES

- Skip ATU HiSWR retune if the current bin contains only the ATU setting that matches the ATU relays

- Added **^DA** command to display current ATU frequency, relay settings, and bypass SWR. Get with **^DA;** response is like
^DA10128 AN1 Side TX 280 nH (L05) 571 pF (C36) SWR Bypass 4.0;

- Add Tech Mode FAN SPEED DWELL menu item and **^DW** command to set the time fans stay at a given speed after crossing a cool-down temperature threshold.

- Add Tech Mode BOOT BLOCK VERSION menu item and **^BV** command to display the boot block firmware version. **^BV;** response is like **^BV01.06;**

02.27 7/17/2019 (Production 8/8/2019)

- Reduce band line change detect period to avoid missing Xcvr frequency messages

- Defer startup PA inline to reduce chance of input power fault when K3 and amp are started together and keyed before K3 receives amp OPER

- ATU HiSWR retune on same frequency was unnecessarily constrained

- Reset time-to-fault on overdrive events whenever PA is bypassed, changes some PA current faults on band/antenna switch from hard to soft faults

- Add watchdog timer to TCP & UDP operations

- Fix WDT reset and occasional hang during power off

- Send **^ON0;** during shutdown to USB Host & TCP client for KPA1500 Remote

2.17 3/31/2019 (Production 4/3/2019)

· Add Tech Mode PA CURR status page showing PA current to cA resolution

· Icom 160 meter frequency CI-V message was not parsed correctly

· Smooth LCD power and SWR display

· ATU improvements

02.10 3/5/2019 (Production 3/19/2019)

· Peak hold was stuck on highest LED in current transmission

02.09 2/24/2019 (Beta 3/1/2019)

· ATU memory erase releases ATU relays

· Don't bypass PA on QSY if ATU relays don't change

· ATU recall tune on each XCVR frequency message, not just when frequency changes by more than a bin width

· Don't set OVR LED on faults that are not "overdrive", e.g. NO MATCH, supply voltages, temperature, etc

02.07 2/7/2019 (Beta 2/19/2019)

· ATU changes to trade off slower speed for improved match

· Use PEAK HOLD for LCD status display of forward power & PA current

· Sometimes low order Power LED lit at startup

· Sometimes ANT and ATU LEDs weren't lighting at startup

· Menu items blink only the value being edited

· Start peak hold time at each transmission rather than last power peak (changed in 2.10)

· Cancel ATU tune started with **^PB** with **^FE** command, ATU TUNE or ATU MODE buttons

· Stop LCD edit menu value blink while UP or DOWN button is held

· Change **^PD** (LED POWER DECAY) default to 32

· Show single peak power LED

· Don't blink OVR LED for ATU retune or band changes

02.02 01/10/2019 (Beta 1/10/2019)

· LED SWR bar display power threshold, is now 25W in mode OPER, 3W in STBY

· Add LED POWER DECAY menu item and **^PDnnn;** command to adjust LED power bar decay speed. Useful values seem to be between 16 and 64, default is 16 (should have been 32, see 02.03).

· Turn off OVR LED after fault reset

· Add command **^PB;** to start an ATU retune that searches existing ATU settings for the current frequency and antenna and installs the best setting it can find. The search stops with SWR 1.0:1 or after trying all the available settings for the current frequency. The ATU SWR STOP threshold does not stop this search. **^PB** is intended to help select the best of several nearly identical settings for an antenna whose stored ATU settings may vary depending on weather, direction, or high Q antennas whose best ATU setting varies with frequency within the frequency segment. **^PB;** may be assigned to a program function key with the KPA1500 Utility, Configuration tab, Edit Configuration, PF Keys.

02.00 12/30/2018 (Production 1/3/2019)

This is a required firmware update. Please install before further use of the KPA1500.

· Corrects a software timing issue that could, in some rare cases, damage the KPA1500 PA transistors on 160M

· T/R improvements in fault scenarios

· Add **^PWK** getter for peak forward power

· Remove **^FP** command, always use new fan speed profile

· Remove PA gain tests during keying transitions

· Relax the 50V low voltage test to accommodate generator operation

· Avoid ATU retune with stale TX frequency count (TU N6TV)

· Note regarding RF IN, NO KEY IN LCD message:

· If your transceiver provides RF after KEY IN is raised, and you see RF IN, NO KEY IN, use the menu item T/R ADDED TIME (tech mode) to slightly extend Transmit to Receive timing by a few milliseconds

· RF IN, NO KEY IN is expected if amplifier KEY IN is interrupted by a device such as an N8LP SteppIR Tuning Relay

01.87 10-15-2018 (Production 11/7/2018)

New Features

· Add UDP command server. Accepts just one KPA1500 command per input packet. UDP, TCP, USB Host and XCVR SERIAL HOST may operate concurrently. Only one TCP client may be connected, but several clients may use UDP.

· Add Tech mode XCVR SERIAL LOOP menu item and **^XL** command for loopback diagnostic testing of 3.5mm XCVR SERIAL RS-232 port. Use a shorting plug (tip to ring). Configure serial port as RS-232 (RADIO TYPE other than Icom). Navigate to XCVR SERIAL LOOP menu item, hold EDIT,

and tap UP to start loopback testing. The bottom LCD line shows the last 5 characters sent and the last 5 characters received. Once a full symbol set pass is complete (95 printable ASCII characters), the bottom line shows OK if the last 95 received characters match those sent. SERIAL PORT SPEED XCVR may be changed while the test is running.

· Changed temperatures for fan speeds:

· On 160 thru 10 meters, fans increase speed at 50, 70, 80, 87, and 95 degrees, and slow at 40, 55, 75, 81, and 88 degrees.

· On 6 meters the fans increase speed at 40, 50, 65, 80, and 90 degrees and slow at 35, 41, 51, 66, and 81 degrees.

· New serial command **^FP0;** can be entered in the KPA1500 Utility command tester to revert to previous fan profile, which sped up at 60, 70, 78, 85, and 90 degrees and slowed at 57, 67, 75, 82, and 87 degrees. **^FP1;** selects the "new" fan speed profile, **^FP0;** selects the "old" fan speed profile.

Bug Fixes and General Enhancements

· Add client host name to DHCP request packet, KPA1500_xxxx, where xxxx is the amp's serial number. This might be visible in some router's admin management pages.

· RADIO TYPE and XCVR SERIAL HOST can be changed without power cycle (TU N6TV)

· RADIO TYPE BCD shouldn't send AUXBUS messages (TU AC0C)

· Revert a change that broke FANticipator (TU K8UT)

· Improve power ON button handling

· Change ATU frequency from TX frequency even if TX frequency hasn't changed. XCVR frequency may have moved ATU.

· Ignore XCVR frequency changes when KEY IN is pulled down

01.78 8-30-2018 (Beta on 9/19/2018)

New Features

· Add PEAK HOLD menu item and **^PH** command. LED "power bar" peak hold time may be set between 0.1 and 9.9 seconds.

· CI-V support for older Icom transceivers that send "operating frequency" but not "TX frequency". KPA1500 may retune ATU on TX/RX transition if split is wide and ATU settings are different.

Bug Fixes and General Enhancements

· Change ATTEN RELEASE menu item from 1400-5000 mSec to 1.4 to 5.0 seconds. Default unchanged from 3 seconds.

· Add intermittent tone alarm for "soft" (Overdrive) faults. **^SP** command and ALARM TONE menu item choose between ALARM TONE OFF, steady tone for FAULT (the default), intermittent tone for OVR, or both.

· Write "soft fault" (overdrive) events to fault log

· Wake on LAN bug fix to improve reliability of KPA1500 Remote program's Power ON.

01.72 8-2-2018 (Beta on 8/23/2018)

New Features

· Wake on LAN capability to switch amplifier on via Ethernet with a "magic packet" containing the KPA1500's MAC address

· Tech mode NET WAKE on LAN menu item and **^WL** command

Bug Fixes and General Enhancements

· Add tech mode VOLTS menu item to display the 5, 10, 12, -12, and 52 volt supply voltages

· Add **^EB** command, e.g**. ^EB 14125;** to erase a single ATU bin (frequency segment) for the current antenna

· **^DF;** without explicit frequency shows ATU settings for the current frequency

· Reset fault with Mode OPER button press

· ATU HiSWR retune rearranges ATU settings in the bin so most recently used setting is found first next time

· ATU memory searches full frequency range rather than just amateur bands (for MARS ops)

· Change fault text messages for 50V supply to 52V

01.64 7-12-2018

New Features

· Support for MARS operation. Frequency restraints have been removed except 26-28 MHz as required by an FCC rule

· Support for Elecraft Remote Software, ver 1.0.4.0

· Overdrive (OVR LED) event details are now displayed on LCD for faster diagnosis

· Support for PF1 and PF2 buttons:

· Use KPA1500 Utility (1.18.6.20 or later), Configuration, Edit Configuration, PF Keys or the new **^PF** command to enter command text.

· Hold the KPA1500 Mode button to "execute" the **^PF1** command string

· Hold the KPA1500 Antenna button to "execute" the **ˆPF2** command string

· XCVR SERIAL Port now supports KPA1500 Command Reference commands for control applications. Use the XCVR SERIAL HOST menu item to enable.

· May not be used concurrently with transceiver frequency from transceiver

· Firmware installation is only through the USB HOST connector

· The XCVR SERIAL port cannot be used to turn the amplifier on

· Additional programming reference commands, see KPA1500 Programmers Reference version 1.63 for details

· ˆAB (ATU settings per Bin)

· **ˆDT** (LCD Text)

· **ˆFS** (current fan speed)

· **ˆLQ** (LED Status)

· **ˆOC** (overdrive reason)

· **ˆPF** (program function key "macro" text)

· **ˆXH** (XCVR SERIAL HOST)

· The FAN SPEED menu item now shows current fan speed as well as minimum fan speed.

Bug Fixes and General Enhancements

· Compensate for an effect that caused SWR display to be too high

· Increase RF Input and Reflected power limits and time to fault

· Increase the time for you to respond to moderate overdrive:

· Increase from 3 to 10 seconds for constant carrier

· Up to 20 seconds for SSB and CW modes

· Improve ATU Full Search and HiSWR retune speed:

· The number of stored ATU settings per bin (frequency segment) may now be set from a range of 1 to 31 on a per band basis. This can be used to limit ATU HiSWR retune examination of stale ATU settings when there are few externally switched antennas

· Use KPA1500 Utility (1.18.6.29 or later), Configuration, Edit Configuration, ATU Settings/Bin or the ATU SETTINGS/BIN menu item to configure

· Correct handling of Kenwood frequency responses when polled by an external logging program

· Reduce LED SWR flashing during RF power ramp up

· Correct an occasional LCD display of 1W when not transmitting

· Correct responses to commands **^AL, ^VI, ^WS**

· Change the temperature points at which the RF Deck fans are switched in. This does not change the Power Supply's fan speeds.

· Prior settings: 60, 65, 70, 75, 80 degrees

· New settings: 60, 70, 78, 85, 90 degrees

01.40 3-30-2018

New Features

· Owners of K3/K3S models may use the KPA1500 ATU TUNE button to start a Full Search Tune and key the transceiver when RF is needed

· Requires K3 MCU version 05.63 or later

· The K3/K3S must be connected to the KPA1500 with the KPAK3AUX cable kit or the E850463 cable

· The KPA1500 ATU XCVR KEY menu item must be ON

· Bypass power amplifier when RF input arrives before or after KEY IN

· Use T/R Added Time menu item if exciter continues to send RF after KEY IN is raised. This may occur if the key line hasn't been connected, or an interrupter (e.g. N8LP SteppIR Tuning Relay) breaks the key line and RF arrives, or exciter continues to provide RF after raising KEY IN

· You can inspect ATU memories stored after a successful Full Search Tune. Use the **^DF** command (e.g. **^DF 14125;**) from the KPA1500 Utility Command Tester. The **^DF** response shows ATU settings (nH and pF, Bypass SWR)

Bug Fixes and General Enhancements

· T/R timing improvements for fault handling and hot switch from STBY to OPER

· Frequency counter stability improvements

· Speed up ATU HiSWR RETUNE

· Add current ATU setting to fault entry. Operators can now see the ATU settings associated with an entry in the Fault Log.

01.28 3-14-2018

· Frequency counter stability improvements

· ATU HiSWR RETUNE menu item and **^HS** command are now per-band

· PHY (Ethernet LAN) interrupt no longer turns on power

01.18 1-28-2018

· ˆFR getter now responds with frequency as provided by transceiver (AUXBUS, CI-V, XCVR serial) or **ˆFR** setter

· Add static TCP/IP address capability

· Add **ˆCP** to get or set KPA1500 TCP/IP command server port number

· Smooth out values shown on KPA1500 Utility Operate page

· Some status pages and menu items are shown only in TECH MODE